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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/032,098	12/31/2001	Nissim Savareigo	Q67557	5980

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EXAMINER	
NGUYEN, SANG H	
ART UNIT	**PAPER NUMBER**
2877	

DATE MAILED: 03/01/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/032,098	SAVAREIGO ET AL.	
	Examiner	Art Unit	
	Sang H Nguyen	2877	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *05 January 2004*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-33* is/are pending in the application.

4a) Of the above claim(s) *24-33* is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-23* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. §§ 119 and 120

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

13)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application) since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.

a) ☐ The translation of the foreign language provisional application has been received.

14)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121 since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) *03/06/02*.
4) ☐ Interview Summary (PTO-413) Paper No(s). _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: .

DETAILED ACTION

Election/Restrictions

Applicant's election without traverse of Group I (claims 1-23) filed on 08/02/03 is acknowledged.

Applicant should have canceled non-elected claims 24-33.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1-2 and 10-11 are rejected under 35 U.S.C. 102(b) as being anticipated by Takagi et al (U.S. Patent No. 5,166,985).

Regarding claims 1 and 10; Takagi et al discloses an electrical circuit inspection apparatus and method, comprising:

- a first inspection funcitionality considered to be a first camera (5a of figure 11) operative to obtain first attribute light information (figure 11) with respect to a plurality of location (a, b of figure 2b) of a conductor considered to be electronic part (10 of figure 2A) on an electrical circuit board (1 of figure 11);

- a second inspection functionality considered to be a second camera (5b of figure 11) operation to obtain second attribute light information (figure 11) with respect to the plurality of the location (a, b of figure 2B) of the conductor (10 of figure 2A) on the electrical circuit board (1 of figure 11);
- a conductor attribute analyzer consider to be an image processing unit (6 of figure 7) and controller (7 of figure 7) for receiving the first attribute information and the second attribute information (figure 11) from the conductor (10 of figure 2A) on the electrical circuit board (1 of figure 11), and evaluating a combination of the first attribute light information and the second attribute light information to determine an inspection attribute of a conductor at the conductor location (col.7 lines 5-65 and figures 7 and 8).

Regarding claims 2 and 11; Takagi et al discloses the first inspection functionality considered to be a first camera (5a of figure 11) for sensing reflectivity at the conductor location (10a of figure 3B) as a basic for the first attribute information (see figures 3A and 11).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which

said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 3-9 and 12-23 are rejected under 35 U.S.C. 103(a) as being unpatentable over Takagi et al (U.S. Patent No. 5,166,985) in view of Chiu et al (U.S. Patent No. 4,677,302) and Hara et al (U.S. Patent No. 4,692,690).

Regarding claims 3, 12, and 15-18; Takagi et al discloses the claimed invention except for the first inspection functionality for determining a top width dimension of the conductor based on the sensed reflectivity. However, Chiu et al teaches that it is known in the art to provide an optical system for inspecting printed circuit boards having a linear detector array (14 of figure 1) for detecting reflected lights (8 and 19 of figure 1) from top and bottom surface of a resistor component (6 of figure 1) on the printed circuit boards (4 of figure 1) to generate to first inspection functionality considered to a divider (73 of figure 11), a controller (76 of figure 11), and an amplitude discriminator (77 of figure 1) for determining a top width dimension considered to be a height (H of figure 1) of resistor component (6 of figure 1) the based on the sensed reflectivity. It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify an electrical circuit inspection apparatus and method of Takagi et al with limitation the first inspection functionality for determining a top width dimension of the conductor based on the sensed reflectivity as taught by Chiu et al for the purpose of detecting surfaces having different heights/dimensions of the component on the printed circuit board.

Regarding claims 4-7, 9, 13-14, and 20-23; Takagi et al discloses the claimed invention except for the second inspection functionality for sensing

luminescence at the conductor location as based on the second attribute information and analyzer for determining a top and a bottom width dimension of conductor. However, Hara et al teaches that it is known in the art to provide a patterned detecting for inspecting a printed wiring board including the second inspection functionality considered to be a fluorescence detector (19 of figure 2) for detecting fluorescence considered to luminescence light (44 of figure 2) at a bottom width dimension considered to be a wiring plane (2' of figure 2 and col.7 lines 5-30) and infrared detector (15' of figure 3) for detecting reflected light (45 of figure 3) from a top width dimension considered to be a wiring pattern (2 of figure 3), wherein the fluorescence detector (1 of figure 2) and infrared detector (15' of figure 3) coupled to an analyzer having binary signal generators (53, 53' of figure 10), memories (54, 54' of figure 10), and a defect outputting circuit (59 of figure 10) for determining the top and bottom surface of component. It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify an electrical circuit inspection apparatus and method of Takagi et al with limitation the second inspection functionality for sensing luminescence light at the conductor and determining a bottom width dimension of conductor location as based on the second attribute information and analyzer for determining a top and a bottom width dimension of conductor as taught by Chiu et al for the purpose of detecting surfaces having different heights/dimensions of the component on the printed circuit board whose substrate can generate fluorescence light when exposed to exciting light (col.6 lines 35-42).

Regarding claims 8 and 19; Takagi et al discloses the claimed invention except for determining a cross section of the conductor. However, Chiu et al discloses a divider (73 of figure 11), a controller (76 of figure 11), and an amplitude discriminator (77 of figure 1) for determining a cross section of the resistor component (6 of figure 1 and figure 4A-4B to 6A-6B). It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify an electrical circuit inspection apparatus and method of Takagi et al with limitation the first inspection functionality for determining a top width dimension of the conductor based on the sensed reflectivity as taught by Chiu et al for the purpose of detecting surfaces having different heights/dimensions of the component on the printed circuit board.

Conclusion

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.Kim (6,542,236) discloses illuminating and optical apparatus for inspecting soldering of printed circuit board; Bishop (6,014,209) discloses method and apparatus for inspecting multilayered electronic parts; Shintani et al (5,298,977) discloses visual inspection method; Kakuchi et al (5,087,121) discloses depth/height measuring device; Takagi et al (5,076,697) discloses apparatus and method for inspecting defect of mounted component; or Kishimoto et al (4,978,224) discloses method and apparatus for inspecting mounted of chip components.

Any inquiry concerning this communication or earlier communications from

the examiner should be directed to Examiner Sang Nguyen whose telephone number (571)3272-2425. The examiner can normally be reached on Monday through Friday from 8:30 am to 5:00 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mr. Frank Font, can be reached on (571)272-2415.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703)308-0956.

SN

Nguyen/ sn

January 28, 2004

Frank G. Font
Supervisory Patent Examiner
Art Unit 2877
Technology Center 2800